

MISSILES AS THE FULCRUM OF WAR

"Without vision, the people perish."
— Proverbs

"If you're in a fair fight, you didn't plan it properly."
— Nick Lappos
Chief R&D Pilot
Sikorsky Aircraft

Introduction

We have the technology. Lack of brains isn't the problem.

Want to "fire for effect" on a major enemy position? Done—the "steel rain" of the Multiple Launch Rocket System (MLRS) in Desert Storm, 1991. Want to kill Third World thugs in their own living room? Tube-launched, Optically-tracked, Wire-guided (TOW) missiles did the job in Mogadishu in 1991. Want to remain in the comfort of your own fox-hole while you do it? Not a challenge—remote Avenger operations since the mid-1990s. We can devise a missile that can hit practically anywhere, anytime, in any weather. Take your pick—PATRIOT, MLRS, etc. But can the Army afford it? More to the point, *will* the Army afford it?

We envision a battlefield where the enemy can find no sanctuary and cannot retaliate. In battle, mobility and earth are sanctuary: "Incoming!" means "Dive!" But we see missiles as the key to "turning the flank from above" (or even behind), thus changing earth from sanctuary to grave. In Erwin Rommel's words: "The enemy's air superiority has a very grave effect on our movements. There's simply no answer to it." Missiles are the Army's "air superiority" over an enemy—highly mobile, perfect kamikazes, foiling all countermeasures and inflicting enormous damage with utter disregard for themselves.

Consider a situation in which American troops find themselves in

John Carter

cities with poor road, rail, air, and communications infrastructure. The hills and streets are crawling with bandits. The enemy's largest formations "hug" allies and noncombatants alike, producing a situation in which there are "no war-winning targets, but many war-losing ones." This is an enemy whose typical formations are not formations at all, but Chechnya-style 20-man teams scattered throughout urban and rural terrains.

The mission was asserted to last a few months; it has stretched to years. It was peacekeeping, but the countryside has suddenly burst into open warfare aimed at ejecting the infidels. Your own units are scattered—not your choice, but as required by diplomatic nation-building constraints. Equipment designed for "the big one" is rusting from constant exposure to long, harsh winters. And because of frequent rotations, you're the "old hand" and you've only been there 6 months.

In 200X

The Army Tactical Missile System (ATACMS) is used as the Army's immaculate weapon for systematically destroying electrical power and fuel supplies (the deciding factor in Serbia, according

to British Historian John Keegan) with zero risk to American forces. At long ranges, from 100 to 160-plus kilometers, ATACMS is the premier area target as well as mobile-target and point-target weapon of choice (using either Brilliant Anti-Tank submunitions or a unitary warhead). Work done by the U.S. Army Aviation and Missile Command's Research, Development and Engineering Center (AMRDEC) on improved infrared seeker automatic target recognition, microelectromechanical systems, inertial navigation, and countermeasure technology paved the way for this capability: to pound enemies in detail, without warning, beyond their furthest reach.

For the first time, Army artillerymen can devastate the enemy with a pinpoint (20-meter circular error probable) weapon in the 20-100 kilometer range and avoid bomblet collateral damage and cleanup issues entirely. By combining a unitary warhead with an improved anti-jam Guided MLRS (GMLRS), the Point-Hit MLRS brings the battle home to the enemy even while he hugs hospitals and embassies. The standard MLRS is still the "grid square removal system," the weapon of choice to shatter enemy forces, materiel, and morale. The GMLRS reduced the rockets-per-target-destroyed requirement by a factor of 10 and more. Today, there are fewer to fire, fewer to transport and support, and

fewer to build and store.

A helicopter-launched version of the DARPA-developed Loitering Attack Missile (LAM), LAM-Aviation (LAM-A), has few peers. It allows the aviator to kill innumerable targets, such as command posts, mobile missiles, armor, and anti-aircraft sites, deep in enemy territory. Loitering lets us turn the enemy's flank, not only from above, but also from behind. Deep standoff enables major infrastructure strikes by Army aviators. Shoulder-



The Future Missile Technology Integration Program demonstrated key technologies for the Common Missile in May 2000.

fired surface-to-air missiles (SAMs) can't be everywhere at once, and this kind of change increases the defended area by a factor of 100 (to more than 30,000 square kilometers). We always seek to fight "unfairly."

Still closer, in the 5-20 kilometer range, we find a highly proliferated Common Missile, which makes possible the continuous engagement of mobile point targets from guerrilla teams to tanks. With the Common Missile, uncommon destruction is delivered from many platforms: unmanned ground vehicles, current manned light vehicles, helicopters, and Future Combat Systems (FCS), to name a few. Lethality and versatility at unprecedented standoff ranges, and a direct-fire mode for the close battle Common Missile is the utility infielder of tomorrow's unpredictable full-spectrum operations.

To help find targets throughout the 0-100 kilometer range, we employ a variety of unmanned systems, organic to company-sized and smaller units in the Army. LAM-A and the Common Missile are two forms of Unmanned Aerial Vehicles (UAVs), extending the "vision" of their launch platforms and telemetering video back for shared use. Another is Quick Look, a "disposable," munition-sized UAV: a personal UAV for the company commander.

The Low Cost Precision Kill (LCPK) missile means low cost for the program/project/product manager, light weight for the logistician, high loadout for the warrior, and sudden death for the enemy. LCPK made it possible, for the first time, for an Apache to accomplish literally dozens of kills, of both light and heavy targets, in a single sortie. In countries with Vietnam-type intermingled strongholds, combined with today's proliferated shoulder-fired SAM environment, LCPK changed our world from sorties per target to targets per sortie. Ground-launched LCPK also finds innumerable uses as a devastating through-the-window weapon in urban warfare. With its extremely light weight, it is a logistician's delight to sustain in theater.

In the 0-5 kilometer range, we will still have many older systems in use: Javelin, TOW II, TOW Fire & Forget, HELLFIRE, and Longbow. They are all still relevant. Many countries have developed active protection systems (APSSs), but few have produced them. Counteractive protection systems kept alive a missile stockpile we could not afford to replace. Pre-emptive deployment

of counteractive protection systems also fundamentally destroyed much of the APS market—why buy an APS that doesn't work? Combined with a stockpile reliability and service-life extension program, these battle-proven systems continue to savage the enemy in the close fight.

Defeating all known and projected APSSs and reactive/advanced armors, the Compact Kinetic Energy Missile (CKEM) is the king of the 0-5 kilometer fight. This lightweight, sustainable weapon is the follow-on to Line-of-Sight Anti-tank for the close battle, when the tanks are rolling. As Chinese General Sun Tzu said, "Let your plans be dark and as impenetrable as night, and when you move, fall like a thunderbolt." CKEM is a thunderbolt; when that target absolutely, positively has to die. It is the silver bullet for FCS and other light platforms; CKEM is death on tanks.

Tying all these things together are common, modular, fire-control systems, a first for Army ground forces, as exemplified by the Real-Time Adaptive Multi-Munition Technology (RAM Tec) Launcher. As many airborne weapons platforms have demonstrated, it makes a lot of sense to "mission load" specific weapons packages on standard weapons pylons—not to mention the acquisition savings from adopting sta-

ble, common, public-domain interface standards. RAM Tec's Joint Technical Architecture, commonality, reusability, combat versatility, and affordability were key to putting more "steel-on-target."

Conclusion

American airpower is omnipresent on our fields of action because it offers diplomats the tantalizing promise of quick, immaculate victory for the price of "a few" American widows and orphans. If the Army is to be a relevant force at the "combat" end of the operational spectrum, it must establish its role beyond "muddy boots" as a determining force that cannot be ignored in our Nation's marketplace of diplomatic and military options.

We believe that the key metric to "get light and get there" in weapons is "pounds per kill"—how many pounds of weapon, launch platform, and support we must move in country to kill a class of targets. We also believe that "cost per kill" is positively correlated with this metric. Our enablers are increased precision (as in Guided MLRS and LCPK), range (as in Common Missile and LAM-A), and increased versatility (as in the RAM Tec Launcher and Common Missile).

We hear the prophetic words of MG J.F.C. Fuller, writing in his 1945 book *Armament and History*: "The weapon of superior reach or range should be looked upon as the fulcrum of combined tactics." We see missiles as the fulcrum of a new kind of war for the Army, one in which the weapon of longest reach defines tactics; perhaps even, the strategy. The systems and technologies needed for victory in 2010 are embedded in our "weapons roadmap"; we can create the future. All we must do is do it.



The Guided MLRS Technology Demonstration in 1998 paved the way for the current Guided MLRS System Design and Demonstration Program.

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